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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,459	05/16/2007	Paul Wallace	14113-00040-US	1128
23416 7590 08/17/2009 CONNOLLY BOVE LODGE & HUTZ, LLP P O BOX 2207 WILMINGTON, DE 19899				
EXAMINER				
CLARK, GREGORY D				
ART UNIT		PAPER NUMBER		
1794				
MAIL DATE		DELIVERY MODE		
08/17/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/582,459

**Applicant(s)**

WALLACE ET AL.

**Examiner**

GREGORY CLARK

**Art Unit**

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/55/08)  
Paper No(s)/Mail Date 07/17/2008.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Double Patenting*

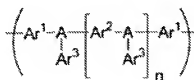
The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-23 are provisionally rejected on grounds of nonstatutory double patenting over claim 11 of copending application 10568659. This is a provisional double patenting rejection since the conflicting claim has not been patented.

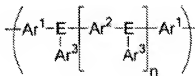
The instant application claims an oligomer or polymer shown below by the structure of Formula 1:



Formula 1

Wherein n is at least 1; each A is N or P; each Ar1 and Ar3 is arylene or heteroarylene; Ar2 is arylene or heteroarylene containing a linking ring to which the two A atoms are both directly linked and at least one of Ar1 or Ar2 is substituted with at least one substituent.

The copending application claims a polymer shown below by the structure of Formula 1a:



Formula 1a

Wherein n is 0-3; each E is N or P; Ar1-Ar3 is arylene or heteroarylene.

Although not mentioned in the copending application, Ar2 in Formula 1a is also a linking group just as is the case for Ar2 in Formula 1 in the instant application. Both

Formula(s) 1 and 1a are used as monomeric units to make oligomers or polymer to be used in electrical devices that include an electroluminescent device.

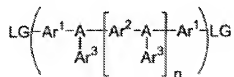
***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

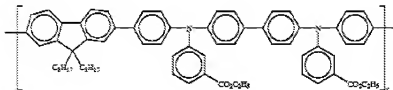
1. **Claims 11-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Inbasejaran (6309763).**
2. **Regarding Claims 11-13,** the applicant claims an optionally monomer Formula 5:



Formula 5

Wherein n is at least 1; each A is N or P; each Ar<sup>1</sup> and Ar<sup>3</sup> is arylene or heteroarylene; Ar<sup>2</sup> is arylene or heteroarylene containing a linking ring to which the two A atoms are both directly linked and at least one of Ar<sup>1</sup> or Ar<sup>2</sup> is substituted with at least one substituent.

Inbasejran discloses that Formula 6 (column 4) can be formed as the dibromide derivative (column 5, line 65).



Formula 6

Formula 6 shows  $n = 1$ ,  $A = N$ ,  $Ar_1$  is a substituted arylene with aliphatic substituents,  $Ar_3$  is substituted aryl,  $Ar_2$  is a biphenyl linking group connecting both N atoms. The dibromide derivative of Formula 6 can be used in a polycondensation catalyzed by palladium (variable oxidation state metal) (column 6, lines 55 and 56) (per claim 13). LG represents the Br (halogen) leaving group in the dibromide derivative of Formula 6 (column 5, line 65) (per claims 12 and 14).

3. **Regarding Claim 14**, Inbasejran discloses that the LG represents the Br (halogen) leaving group in the dibromide derivative of Formula 6 (column 5, line 65). An alternative polymerization process involving dihalo-functional reactants (dibromide derivative, Formula 6) may be carried out using nickel coupling (complex catalyst) reactions (column 7, lines 29-31).

4. **Regarding Claims 15 and 16**, Inbasejran discloses an alternating copolymer results when a dibromide (Formula 6 derivative) is reacted with a boron-containing

monomer (reactive boronic group) under Suzuki reaction conditions (column 7, lines 5-9), palladium catalyst (column 6, lines 55 and 56) and base (column 6, lines 61-62).

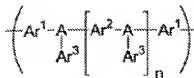
***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1-10 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inbasejran (6309763).**

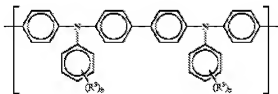
6. **Regarding Claims 1-3,** the applicant claims an optionally substituted oligomer of polymer comprising a repeat unit of Formula 1:



Formula 1

Wherein n is at least 1; each A is N or P; each Ar1 and Ar3 is arylene or heteroarylene; Ar2 is arylene or heteroarylene containing a linking ring to which the two A atoms are both directly linked and at least one of Ar1 or Ar2 is substituted with at least one substituent.

Inbasejaran discloses an oligomer/polymer comprising a repeat unit represented by Formula 2 (column 2):



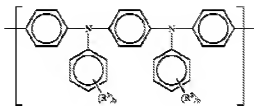
Formula 2

Formula 2 of Inbasejaran reads on Formula 1 of the applicant where A is N, Ar1 is phenyl, Ar2 is a biphenyl linking group connecting both N atoms. Inbasejaran fails to show a substituent on Ar1 or Ar2.

The examiner takes the position that conductive polymers based on Formula(s) 1 or 2 are effective due to their ability to allow electrons to flow across the conjugated pi orbital(s) of the aromatic rings and the non-bonded electron pair on nitrogen. Adding a substituent on Ar1 or Ar2 would have been an obvious variant and the resulting polymers would have the same or similar electrical properties. Since the parent polymeric structure was known in the art to add a substituent to a well known monomeric unit would not be novel, absent unexpected results.

7. **Regarding Claims 4 and 5**, Inbasejaran discloses that Formula 3 can be a repeat unit:

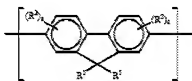




Formula 3

Formula 3 shows Ar1 and Ar2 are phenyl (per claim 4) and Ar3 is a substituted phenyl (per claim 5).

8. **Regarding Claims 6-9**, Inbasejaran discloses that Formula 4 (column 15) can be second repeating unit (per claim 6) with Formula(s) 2 or 3 (shown above).



Formula 4

Such a co-polymer would show the first and second repeating units in conjugation (per claim 7). The second repeating unit is a fluorene unit (per claim 8). R1 can be aliphatic (column 2, line 1) (per claim 9).

9. **Regarding Claim 10**, Inbasejaran discloses that copolymers (Formula 2 or 3) can be blended with the emitting polymer and the mixture deposited as one layer (column 10 lines 50-52).

10. **Regarding Claims 17-20**, Inbasejara discloses that copolymers of Formula (s) 3, 4 or 6 can be used in an electroluminescent device (optical device) (column 2, lines 45-47) (per claims 17 and 20). The copolymers can be blended with the emitting polymer and the mixture deposited as one layer (column 10 lines 50-52) (per claim 18) located between the anode and cathode (column 2, lines 35-44) (per claim 19).

11. **Claims 21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inbasejara (6309763) in view of Allen (6,858,703)**

12. **Regarding Claim 21 and 23**, Inbasejara discloses the copolymers can be used in an electroluminescent device (column 2, lines 45-47) but fails to mention a switching device.

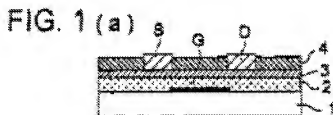
The examiner takes the position that it is well known in the art that triarylamine polymers are used in a host of electronic devices. Allen discloses that triarylamine polymers are used in optical sensor, switching devices and field effect transistors (column 83, lines 20-30).

13. **Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inbasejara (6309763) in view of Allen (6,858,703) and further in view of Hirai (6,740,900).**

14. **Regarding Claim 22**, Inbasejaraan in view of Allen discloses triarylamine polymers used as a field transistor but fail to mention the structure of the device.

The examiner takes the position that it is well known in the art that an insulator layer be placed in various location with respect to the gate, drain and source electrodes.

Hirai discloses that the organic thin-film transistor contains a organic semiconductor layer 3, a gate electrode G, a drain electrode D, and a source electrode S that are in Figure I(a) shown below:



Hirai further discloses that a dielectric layer (field-effect transistor) serves as gate insulation layer 2 (column 7, lines 44-45). The above figure shows that the gate electrode G and the organic semiconductor layer 3 are both in contact with the gate insulation layer 2 located on side one. In addition, the above figure shows that the source electrode S and the drain electrode D are located on the organic semiconductor layer 3 on side two.

Hirai shows that the claimed structure for field effect transistor was well known in the art.

With the reasonable expectation of success a person with ordinary skill in the art at the time of the invention would select from known field-effect transistor structures and readily substitute the conductive polymers disclosed by Inbasejaran (Formula(s) 2-6 for the organic semiconductive layer 3 disclosed by Hirai in Figure I(a) since the conductive polymers of Inbasejaran would be functional equivalents to the polymers typically used to make an organic semiconductive layer.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GREGORY CLARK whose telephone number is (571)270-7087. The examiner can normally be reached on M-Th 7:00 AM to 5 PM Alternating Fri 7:30 AM to 4 PM and Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/  
Supervisory Patent Examiner, Art Unit 1794

GREGORY CLARK/GDC/  
Examiner  
Art Unit 1794